

**P M ₁₀ AND P M _{2.5} HOT SPOT
ANALYSIS – EXCERPTS FROM
AIR QUALITY STUDY**

**I-15/CLINTON KEITH ROAD
INTERCHANGE IMPROVEMENT
PROJECT**

EA# 0F5800

RIVERSIDE COUNTY, CALIFORNIA

Prepared for

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1.1 PROJECT LEVEL PM₁₀ HOT SPOT ANALYSIS

As shown in Table 1, the Air Basin, which includes part of the County, is in serious nonattainment of PM₁₀ per federal designation. Because the project is located in an area that is federally designated as nonattainment for PM₁₀, a qualitative PM₁₀ hot spot analysis is required by the Transportation Conformity Rule (40 CFR Parts 51 and 93). Per Section 93.116 of the Transportation Conformity Rule, any project-level conformity determination in a PM₁₀ nonattainment or maintenance area must document that no new local PM₁₀ violations will be created and the severity or number of existing violations will not be increased as a result of the project.

FHWA Guidance was followed for this project-level PM₁₀ hot spot analysis. The FHWA Guidance states that a reasoned and logical explanation of why a hot spot will not be created or worsened should be provided for project-level conformity determinations.

Table 1 – Designations of Criteria Pollutants for the Air Basin

Pollutant	Federal	State
O ₃ (1-hr)	Extreme Nonattainment	Nonattainment
O ₃ (8-hr)	Severe Nonattainment	Nonattainment
NO ₂	Attainment	Attainment
CO	Serious Nonattainment	Attainment
PM ₁₀	Serious Nonattainment	Nonattainment
PM _{2.5}	Nonattainment	Nonattainment

Source for State Information: CARB

Source for Federal Information: EPA

1.1.1 Existing Local PM₁₀ Air Quality

The closest air monitoring station to the project is the Perris Station. The Station is approximately 32 km north of the project site and is likely to experience similar environmental conditions as the project site. Table 2 provides the highest 24-hour daily PM₁₀ measurements for the Perris Station for the last five years. As shown in Table 2.3-2, the daily PM₁₀ at the Perris Station has not exceeded the daily NAAQS of 150 µg/m³ in the last five years.

Table 2 – Background Air Pollution Data Summary for PM₁₀ at Perris Station

Year	Highest 24-hour Concentration for PM ₁₀ (µg/m ³)	Number of Days Exceeding State Standard	Annual Arithmetic Mean for PM ₁₀ (µg/m ³)
2000	87	13	41.1
2001	86	16	40.8
2002	100	21	45.1
2003	142 (116 H2H)	17	43.9
2004	83	15	41.4

Monitor Site Address: 237 North D Street Perris, Ca

Source of data: SCAQMD, EPA AIRS

CAAQS: 24-hour = 50 µg/m³, Annual = 20 µg/m³; NAAQS: 24-hour = 150 µg/m³, Annual = 50 µg/m³

1.1.2 Qualitative PM₁₀ Hot Spot Conclusion

Studies have been performed indicating that if no violations have been recorded in the project vicinity by air district monitors, and the monitored concentrations are not close to the NAAQS (meaning less than

about 80 to 90% of the NAAQS threshold), no PM₁₀ hot spot can occur as a result of a typical project (Caltrans Interim Guidance, 2002). As shown in Table 2, the highest daily measured PM₁₀ concentrations in the area for 2002, 2003, and 2004 were 100 µg/m³, 142 µg/m³, and 83 µg/m³, respectively. These measured concentrations represent less than 80% of the NAAQS of 150 µg/m³; except for 2003. The reading in 2003 is an anomaly; the maximum recorded concentration was on February 2, which was a high wind event day (winds 25-35 miles per hour). These winds most likely created higher than normal amounts of fugitive dust. The next highest reading at the Perris Station recorded in 2003 is 116 µg/m³ and this value should be used to assess compliance with the NAAQS. If this anomalous high reading is ignored and the second highest value is used instead, all monitored 24-hour PM₁₀ concentrations in the vicinity of the project site are less than 80% of the NAAQS. Thus, a PM₁₀ hot spot is not expected to occur with the implementation of this project.

1.2 PROJECT LEVEL PM_{2.5} HOT SPOT ANALYSIS

On March 10, 2006, EPA published a final rule that establishes the transportation conformity criteria and procedures for determining which transportation projects must be analyzed for local air quality impacts in PM_{2.5} and PM₁₀ nonattainment and maintenance areas (71 FR 12468). The final rule also provides flexibility so that state and local resources are used efficiently. The EPA and FHWA have developed a guidance document, *Transportation Conformity Guidance for Qualitative Hot-spot Analyses in PM_{2.5} and PM₁₀ Nonattainment and Maintenance Areas*, March 2006, to help state and local agencies meet the final rule's hot-spot analysis requirements.

Future qualitative PM_{2.5} and PM₁₀ hot-spot analyses should be based on the new guidance, which supersedes the existing FHWA September 12, 2001, *Guidance for Qualitative Project-Level 'Hot Spot' Analysis in PM₁₀ Nonattainment and Maintenance Areas*. However, any PM₁₀ hot-spot analysis that was started prior to the release of EPA and FHWA new guidance may be completed with the previous 2001 guidance.

As shown in Table 3, the Air Basin, which includes part of the County, is in nonattainment of PM_{2.5} per federal designation. Because the project is located in an area that is federally designated as nonattainment for PM_{2.5}, a qualitative PM_{2.5} hot spot analysis is required by the Transportation Conformity Rule (40 CFR Parts 51 and 93).

Table 3 – Designations of Criteria Pollutants for the Air Basin

Pollutant	Federal	State
O ₃ (1-hr)	Extreme Nonattainment	Nonattainment
O ₃ (8-hr)	Severe Nonattainment	Nonattainment
NO ₂	Attainment	Attainment
CO	Serious Nonattainment	Attainment
PM ₁₀	Serious Nonattainment	Nonattainment
PM _{2.5}	Nonattainment	Nonattainment

Source for State Information: CARB
Source for Federal Information: EPA

1.2.1 Existing Local PM_{2.5} Air Quality

The air monitoring station nearest to the project that records PM_{2.5} is the Riverside Magnolia Station. The Magnolia Station is approximately 45 km (28 miles) north of the project site and is located in an urban area. The conditions at the Magnolia Station are significantly different from those at the project site. Thus, it is unlikely to experience similar environmental conditions as the project site. Table 4 provides the highest 98th percentile 24-hour daily PM_{2.5} measurements for the Magnolia Station for the last five years. The 24-hour standard is attained when 98% of the daily concentrations averaged over three years are equal to or less than the standard. As shown in Table 4, the daily 98th percentile PM_{2.5} at the Perris Station has not exceeded the daily NAAQS of 65 µg/m³ in the last three years. (Preliminary EPA AIRS data indicate the one-year 98th percentile for 2005 is 41 µg/m³.)

Table 4 – Background Air Pollution Data Summary for PM_{2.5} at Riverside Magnolia Station

Year	Highest 24-hour 98 th Percentile Concentration for PM _{2.5} (µg/m ³)	Number of Days Exceeding Federal Standard	Annual Mean for PM _{2.5} (µg/m ³)
2000	66.8	1	25.3
2001	65.8	1	28.2
2002	63.7	0	27.1
2003	56.2	0	22.6
2004	53.7	0	20.8

Monitor Site Address: Riverside Magnolia, 5888 Mission Blvd., Riverside, CA

Source of data: SCAQMD, EPA AIRS

CAAQS: Annual = 12 µg/m³; NAAQS: 24-hour = 65 µg/m³, Annual = 15 µg/m³

1.2.2 Qualitative PM_{2.5} Analysis

Clean Air Act section 176(c)(1)(B) is the statutory criterion that must be met by all projects in nonattainment and maintenance areas that are subject to transportation conformity. Section 176(c)(1)(B) states that federally-supported transportation projects must not “cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.”

To meet statutory requirements, the March 10, 2006 final rule requires PM_{2.5} and PM₁₀ hot-spot analyses to be performed for projects of air quality concern (POAQC). Qualitative hot-spot analyses would be done for these projects before appropriate methods and modeling guidance are available and quantitative PM_{2.5} and PM₁₀ hot-spot analyses are required under 40 CFR 93.123(b)(4).

EPA specified in 40 CFR 93.123(b)(1) of the final rule that POAQC are certain highway and transit projects that involve significant levels of diesel vehicle traffic, or any other project that is identified in the PM_{2.5} or PM₁₀ SIP as a localized air quality concern. The final rule defines the projects of air quality concern that require a PM_{2.5} or PM₁₀ hot-spot analysis in 40 CFR 93.123(b)(1) as:

- ◆ New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;

- ◆ Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;
- ◆ New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
- ◆ Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
- ◆ Projects in or affecting locations, areas, or categories of sites which are identified in the PM_{2.5} or PM₁₀ applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

Based on the *Transportation Conformity Guidance for Qualitative Hot-spot Analyses in PM_{2.5} and PM₁₀ Nonattainment and Maintenance Areas*, March 2006, POAQC include projects that have greater than 125,000 annual average daily traffic (AADT) volumes and greater than or equal to eight percent diesel truck traffic.

Existing (2004) AADT for I-15 at the Clinton Keith Road are equal to or higher than the 125,000 ‘significance’ threshold value and the AADT values on Clinton Keith Road are less than half that value. The 2030 No Build scenario has AADT on I-15 greater than 160,000 and 46,000 on Clinton Keith Road. Table 5 presents the existing, future no build, and future build ADT value for the Clinton Keith Road/I-15 interchange project.

Table 5 – ADT for the Clinton Keith Road/I-15 Interchange Improvement Project

Roadway Segment			Existing	2030	
Roadway	From	To		No Build	Build
I-15	Baxter Road	Clinton Keith Road	125,500	167,115	167,115
	Clinton Keith Road	California Oaks Road	131,000	154,335	154,335
	SB off ramp	Clinton Keith Road	3,900	15,855	15,855
	SB on ramp		6,725	8,915	8,915
	NB off ramp	Clinton Keith Road	5,675	8,835	8,835
	NB on ramp		4,000	14,675	14,675
Clinton Keith Road	Nutmeg Street	I-15	17,620	32,535	32,535
	I-15	Palomar Street	23,690	46,180	46,180

Caltrans (2005) reports that the existing total diesel truck percentage in the project vicinity is 8.4% for all trucks (includes diesel and gasoline). For purposes of this analysis, it is assumed that all trucks with 3 or more axels are diesel fired and 50% of the 2-axel trucks are diesel fired. Using this methodology, which has been discussed with Caltrans staff, the existing total diesel-fired truck percentage is 5.1 percent. The proposed project, in and of itself, will not result in an increase in vehicular traffic (including diesel-fired truck use). The project consists of widening the existing Clinton Keith Road overcrossing and associated entrance and exit ramps – this is not a project on a new alignment providing for new points of access. Further, the project surroundings consists predominantly of existing (and planned) residential development with retail establishments in the immediate area of the interchange. Taking all this into

consideration, it is reasonable to expect that future (i.e., year 2030) no build and build total diesel-fired truck percentages will decrease in the project area as land that is currently vacant is developed for residential use. This is particularly the case if the same methodology and assumptions are used for the future condition (build or no build) as was for the existing conditions regarding diesel-fired truck percentage.

The existing, future no-build, and future build LOS values for the intersections in the project area are presented in Table 6.

Table 6 – LOS Results for the Clinton Keith Road/I-15 Interchange Improvement Project

SEGMENT	LEVEL OF SERVICE (LOS)					
	Existing		2030 No-Build		2030 Build	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
I-15 Mainline, southbound before Clinton Keith Road	C	D	D	F	D	F
Clinton Keith Road, southbound off-ramp	D	E	D	E	A	B
Clinton Keith Road, southbound on-ramp	C	D	E	E	D	D
I-15 Mainline, southbound after Clinton Keith Road	C	D	D	E	D	E
I-15 Mainline, northbound before Clinton Keith Road	D	D	D	F	D	F
Clinton Keith Road, northbound off-ramp	D	D	D	E	A	A
Clinton Keith Road, northbound on-ramp	D	D	E	F	D	D
I-15 Mainline, northbound after Clinton Keith Road	D	D	D	E	D	E

1.2.3 Qualitative PM_{2.5} Hot Spot Conclusion

Based on conversations with Caltrans staff, the 125,000 AADT and 8% diesel truck traffic are not firm ‘significant’ or ‘threshold’ values but are guideline values used to assess whether each individual project could be classified as a POAQC. As indicated in the above tables and text, the existing and future AADT are slightly greater than the 125,000 AADT guideline values. However, the existing and future diesel truck percentage is less than the 8% guideline value. Therefore, the proposed project should not be classified as a POAQC.

Also, as indicated in Table 6, completion of the proposed project will have a benefit in the LOS of the entire interchange and thus reduce idling of stopped traffic. Less idling of traffic reduces the amount of particulates in the air and thus improves air quality in a specific region.

1.3 MITIGATION OF PM₁₀ AND PM_{2.5} DURING CONSTRUCTION

The submitted 2004 Particulate Matter SIP contains provisions calling for mitigation of PM₁₀ emissions during construction. Pursuant to Section 93.117, the project is required to include in its final plans, specification, and estimates, control measures that will limit the emission of PM₁₀ during construction. Such control plans must be contained in an applicable SIP. The prime concern during construction is to

mitigate PM₁₀ that occurs from earth-moving activities, such as grading. The agency who sponsored the PM₁₀ SIP is SCAQMD with concurrence from the CARB. SCAQMD has published the 2004 Rule 403 Fugitive Dust Implementation Handbook (SCAQMD, 2004) that addresses the mitigation of PM₁₀ by reducing the ambient entrainment of fugitive dust. Fugitive dust consists of solid particulate matter that becomes airborne due to human activity (i.e., construction) and is a subset of total suspended particulates. Likewise, PM₁₀ is a subset of total suspended particulates. The Handbook states that 50% of total suspended particulate matter is comprised of PM₁₀. Hence, in mitigating for fugitive dust, emissions of PM₁₀ are reduced.

The Handbook categorizes mitigation of fugitive dust into three sections: best available control measures (BACM); Dust Control Measures for Large Operations; and Contingency Control Measures for Large Operations. BACM is the set of control measures that should be used on all construction activity sources within the boundaries of the SCAQMD. Large operations are defined as those active operations on any parcel that contains 50 or more acres of disturbed surface area; or any earth-moving operation with a daily earth-moving or throughput volume of 3,850 cubic meters or more that occurred three times during the most recent 365-day period. Since the proposed project is within the boundary of the SCAQMD and it is not a large operation, BACM is the appropriate mode of mitigation.

BACM are listed in Table 1 of the Handbook. The Handbook distinctly recognizes the following 20 types of fugitive dust sources:

- ◆ Backfilling;
- ◆ Clearing and grubbing;
- ◆ Clearing forms;
- ◆ Crushing;
- ◆ Cut and fill;
- ◆ Demolition – mechanical or manual;
- ◆ Disturbed soil;
- ◆ Earth-moving activities;
- ◆ Importing/exporting of bulk materials;
- ◆ Landscaping;
- ◆ Road shoulder maintenance;
- ◆ Screening;
- ◆ Staging areas;
- ◆ Stockpiles/bulk material handling;
- ◆ Traffic areas of construction activities;
- ◆ Trenching;
- ◆ Truck loading;
- ◆ Turf overseeding;
- ◆ Unpaved roads/parking lots, and
- ◆ Vacant land.

For detailed information, please refer to the 2004 edition of the Handbook.

SCAQMD requires that at least one BACM be implemented for each source of fugitive dust. In addition, Rule 403 requires activities defined as “large operations” to notify the SCAQMD by submitting Form 403N, implement the Rule 403 Table 2 and 3 control actions, and maintain records of control measure implementation. In summary, Rule 403 should be adhered to for the control of fugitive dust by implementing BACM during active operations capable of generating dust. Implementation of any PM_{10} control measures will also control $PM_{2.5}$.